

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings of claims in the application:

1. (Currently Amended) ~~Confinement~~ A confinement matrix for the storage or incineration of at least one long-life radioactive element, comprising:

at least one crystalline boron compound of a rhombohedral structure ~~including the~~
comprising said at least one long-life radioactive element(s).
2. (Currently Amended) The matrix ~~Matrix~~ according to claim 1, wherein ~~the~~ said at least one long-life radioactive element(s) ~~is/are~~ inserted in the crystalline network of the boron compound.
3. (Currently Amended) The matrix ~~Matrix~~ according to claim 1, wherein ~~the~~ said at least one long-life radioactive element(s) ~~is/are~~ dispersed in oxide form in the rhombohedral structured boron compound.
4. (Currently Amended) The matrix ~~Matrix~~ according to claim 3, wherein the boron compound is B_3Si .
5. (Currently Amended) The matrix ~~Matrix~~ according to claim 3, wherein the boron compound is B_6O .
6. (Currently Amended) The matrix ~~Matrix~~ according to claim 3, wherein the boron compound is B_4C .

7. (Currently Amended) ~~Confinement~~ The matrix according to claim 1 for the incineration of at least one radioactive element, wherein the boron of the boron compound is enriched with ^{11}B .

8. (Currently Amended) ~~Method~~ A method for preparing to prepare a long-life
~~radioactive element~~ confinement matrix for at least one long life radioactive element,
comprising: ~~at least one crystalline compound of a rhombohedral structure in the crystalline~~
~~network of which the long life radioactive element(s) is/are inserted, which consists of~~
mixing a powder of said at least one long-life radioactive element(s) or a powder of at
least one compound(s) of said at least one long-life element(s) with a boron powder or a
boron precursor, to obtain a powder mixture; and
then producing a hot reaction of the powder mixture at a temperature of 800 to
1500°C and sintering the powders obtained;
thereby obtaining said confinement matrix which comprises at least one crystalline
compound of a rhombohedral structure in the crystalline network into which said at least one
long-life radioactive element is inserted.

9. (Currently Amended) ~~Method according to claim 8 wherein the to prepare~~ A
method for preparing a long-life radioactive element confinement matrix for at least one
long-life radioactive element, comprising: ~~at least one crystalline compound of a~~
~~rhombohedral structure in the crystalline network in which the long life radioactive~~
~~element(s) is/are inserted, which consists of~~
mixing a powder of said at least one long-life radioactive element(s) or a powder of at
least one compound(s) of said at least one long-life element(s) with a boron powder or a
boron precursor, to obtain a powder mixture; and

then ~~producing~~ a hot reaction and sintering are performed at the same time by means of reactive sintering at a temperature of 1000 to 1800°C, at a pressure of 30 to 200 MPa;

thereby obtaining said confinement matrix which comprises at least one crystalline compound of a rhombohedral structure in the crystalline network into which said at least one long-life radioactive element is inserted.

10. (Currently Amended) ~~Method~~ The method according to claim 8, wherein the powder mixture also comprises one or more additives ~~chosen~~ selected from the group consisting of metals, catalysts, metal oxides, and ~~or the~~ adjuvants required to form the matrix or improve its properties.

11. (Currently Amended) ~~Method~~ The method according to claim 8, wherein the boron precursor is ~~chosen~~ selected from the group consisting of B₂O₃, H₃BO₃, B₃Si, B₆O and B₄C.

12. (Currently Amended) ~~Method~~ The method according to claim 9, wherein ~~he~~ the powders of the mixture are powders of boron, a metal oxide and at least one radioactive element, and

wherein the reactive sintering is performed at a temperature of 1300 to 1400°C, at a pressure of 30 to 200 MPa.

13. (Currently Amended) ~~Method~~ The method according to claim 8, wherein the powders of the mixture are powders of boron, a metal oxide and at least one radioactive element,

wherein the powders are first reacted at a temperature of 1000 to 1500°C, under an inert gas stream, and

wherein the sintering is then carried out at a temperature of 1200 to 1800°C, at a pressure of 30 to 200 MPa.

14. (Currently Amended) ~~Method to prepare~~ A method for preparing a confinement matrix in the form of a composite material, comprising:

dispersing at least one long-life radioactive element in a crystalline boron compound of a rhombohedral structure ~~wherein the long-life radioactive element is dispersed using~~ by a method comprising:

[[-]] mixing of a powder of the ~~rhombohedral structure~~ crystalline boron compound having said rhombohedral structure with a powder of the radioactive element or a compound of said element ~~chosen~~ selected from the group consisting of oxides, to obtain a mixture; and

[[-]] pressurised sintering of the mixture ~~obtained~~ at a temperature of 1000 to 1800°C, and at a pressure of 30 to 200 MPa.

15. (Currently Amended) ~~Method~~ The method according to claim 14, wherein the boron compound is B₄C, B₆O or B₃Si.